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## OBSERVATIONS ON THE RELATIVE INCREASE OF *STRONGYLUS* SPECIES FOLLOWING THE ADMINISTRATION OF PHENOTHIAZINE TO HORSES


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### INTRODUCTION

In a recent paper Miller (1953) gave a general account of the phenomena of parasitism in horses, emphasised the magnitude of the problem and grouped the helminths into three divisions according to their clinical significance. The third group was designated " Clinically Dangerous " and it contained the *Strongylus* spp., *S. vulgaris, S. edentatus* and *S. equinus*. In Britain *S. vulgaris* and *S. edentatus* are both common whilst *S. equinus* is becoming something of a rarity. The most abundant helminths of horses are the *Trichonema* spp., or cylicostomes, which are also known as " small strongyles "; these were classified as " Clinically Significant but not Usually Lethal."

Phenothiazine is now established as the drug of choice with regard to strongyle infections in horses. Many of the reports on its toxicity are due to it being administered in very large quantities. A paper by Hatcher (1941) well illustrates the results of such a procedure. Variations have also been stated to occur between individual batches of phenothiazine and in the products of different chemical manufacturers. Much critical work has now been performed with this compound and reports of its toxicity are rare. Todd *et al.* (1949) have carried out a lot of this work and have published many accounts of phenothiazine therapy for horses but as yet they have not reported any ill effects using therapeutic doses. Phenothiazine is frequently used at this establishment and no case of poisoning, photosensitisation or other adverse effect upon the host has been noted. As is well known the drug may affect the parasite in three ways. First, it may be lethal; second, it may prevent egg laying; and third, it may prevent the eggs developing.

It has been observed at Newmarket that *Strongylus* spp. are more resistant than other species to the methods employed to combat worms on stud farms. The studs with good control usually have greater *percentages* of *Strongylus* spp. than other studs with little control, although, of course, when total numbers are considered, the studs with good control have fewer *Strongylus* spp. than other studs. Harwood, Habermann, Roberts & Hunt (1941), working in America, found that phenothiazine in doses between 80 and 90 grammes, that is, three times the amount usually administered, removed 95·5 per cent. of *Strongylus* spp. whilst 100 per cent. of the " small strongyles " or cylicostomes were removed. Grahame, Sloan & Morris (1942) using doses of 30 and 34 grammes found that the efficiency against large strongyles was in three cases 54·3, 92 and 100 per cent. respectively, whilst Gibson (1950) using doses of 30 grammes found that the drug had little effect against the large strongyles in five horses. However, in a recent publication Gordon (1952) working in Australia, observes that, " Phenothiazine is very valuable for the attack on all of the strongyles of horses, especially *Strongylus vulgaris*." This is not the general experience of workers in this country and the following observations are submitted to show that the percentage of *Strongylus* spp., as determined by differential larval counts, tends to rise after the administration of phenothiazine, thus confirming Gibson's (1953) work on six aged serum horses in which similar phenomena are reported.

### METHOD

In this work the number of helminth eggs per gramme was estimated either by the Clayton-Lane direct centrifugal flotation technique or by the Stoll dilution method. It must be realised that these do not give results of high mathematical accuracy, but they enable a rough estimate of the parasitic burden to be obtained and a series of such counts shows whether the worm burden is being, or has been, decreased by anthelmintics. It is impossible to distinguish strongyle eggs from each other and consequently the eggs must be hatched artificially so that information as to the species present may be obtained by scrutiny of the diagnostic features of the third stage infective larvae. The faeces are placed in " honey jars," a little charcoal or dried " sterile " faeces (*i.e.*, faeces heated so as to drive out water and kill any parasitic eggs or larvae present) are added, the whole is mixed and kept at 28° C. for seven days. After this time has elapsed the jars are filled with water and inverted over petri dishes, a little water having been added to the latter. After three hours the larvae migrate into the petri dish from which they are removed by means of a fine pipette. If allowed to stand in a test tube they accumulate at the bottom and are concentrated by this means. They are then stained with a weak solution of iodine which kills them and reveals their finer structures, thus enabling a recognition of species to be carried out. A differential count is then performed, the results of which are expressed as percentages of different species present.

In all these experiments an estimation of the parasitic population was made by means of egg and larval differential counts. This gave some idea of the type and intensity of parasitism present. When this information was known the animals under consideration were treated by the administration of phenothiazine in the feed, or in the case of experimental ponies, by stomach tube.

In the majority of cases this lowered the egg count to below 100 eggs per gramme. It was found that to obtain a differential larval count after dosing it was necessary to wait until the number of eggs per gramme rose to above this figure. Such a sample when cultured always yielded enough larvae to make an estimation of species percentage possible. An attempt to culture faeces containing less than 100 eggs per gramme usually produced but few larvae, rendering an accurate differential count impossible.

The animals used were of two main types, first, thoroughbreds and hunters, which were dosed as a routine procedure, and second, experimental ponies upon which observations could be conducted at some length. All animals had

acquired parasites naturally. No ill effects of phenothiazine dosing were observed throughout the experiment.

## Results

Table I is a summary of the results which are also illustrated in the accompanying charts. It will be noticed that in all cases the *percentage* of *Strongylus* spp. larvae hatching from the eggs in the culture rose, once the phenothiazine had been given. The rise may be only slight (Animals 9, 10 and 13) or it may be very pronounced (Animals 2, 11 and 12). In those showing only a slight increase, it is interesting to note that in all cases a second dose further increased the percentage of *Strongylus* spp. (Animals 4, 9 and 13). In a total of 74 cases the phenomenon of a rise in *Strongylus* spp. after dosing with phenothiazine was observed in 40, the remaining 34 showing no such rise.

Table II shows that the rise in *Strongylus* spp. is not permanent and that eventually the percentage of "small strongyles" increases. This may be explained by Gibson's (1953) suggestion that after an anthelmintic has been administered the *Trichonema* spp. larvae undergoing histotropic stages in the mucous layers of the large intestine are no longer inhibited by the presence of adults in the lumen and therefore are able to escape and commence reproductive life, thus causing an eventual increase in the percentage of *Trichonema* spp. eggs and a relative decrease in the percentage of *Strongylus* spp. eggs. Gibson's horses were kept in boxes under conditions which prevented reinfestation as far as possible. In the experiments described in this paper, however, the horses were allowed to graze and consequently the transitory nature of the rise in *Strongylus* spp. eggs may also be due to reinfestation and subsequent maturity of *Trichonema* spp. for their prepatent periods are shorter than those of *Strongylus* spp. Russell (1947) observed that the first appearance of the eggs of *Trichonema* spp. in foals' faeces was at an average age of 14 weeks, *S. vulgaris* eggs being observed at 29·74 weeks and those of *S. edentatus* at 50·87 weeks.

## Discussion

Attention is drawn to Animals 5, 12 and 14 for in them phenothiazine was not completely effective, the egg counts after dosing still remaining in the hundreds. This enabled

Table II

Showing the Increase in *Strongylus* spp. After Dosing and the Gradual Return to a High Percentage of Small Strongyles

| Identification | Date | % small strongyles | % *S. edentatus* | % *S. vulgaris* | % others |
|---|---|---|---|---|---|
| Animal No. 2 | June, 1952 | 86 | 3 | 11 | 0 |
| | June, 1952 | 15 grammes phenothiazine given in food | | | |
| | July, 1952 | 6 | 5 | 89 | 0 |
| | Aug., 1952 | 11 | 24 | 65 | 0 |
| | Oct., 1952 | 15 | 30 | 55 | 0 |
| | Jan., 1953 | 60 | 28 | 9 | 3 |
| „ No. 3 | Dec., 1951 | 100 | 0 | 0 | 0 |
| | April, 1952 | 86 | 0 | 13 | 1 |
| | May, 1952 | 80 | 2 | 16 | 2 |
| | June, 1952 | 15 grammes phenothiazine given in food | | | |
| | July, 1952 | 17 | 7 | 75 | 1 |
| | Aug., 1952 | 44 | 2 | 54 | 0 |
| | Sept., 1952 | 34 | 11 | 55 | 0 |
| | Oct., 1952 | 50 | 13 | 37 | 0 |
| | Nov., 1952 | 65 | 30 | 5 | 0 |
| | Jan., 1952 | 84 | 12 | 4 | 0 |
| | Mar., 1953 | 94 | 2 | 1 | 3 |
| „ No. 5 | Feb., 1953 | 98 | 0 | 0 | 2 |
| | Mar., 1953 | 15 grammes phenothiazine given by stomach tube | | | |
| | Mar., 1953 | 57 | 35 | 8 | 0 |
| | May, 1953 | 33 | 54 | 13 | 0 |
| | June, 1953 | 39 | 46 | 15 | 0 |
| | July, 1953 | 40 | 43 | 16 | 1 |
| | Aug., 1953 | 71 | 15 | 9 | 5 |

Table I

Increase in Proportion of *Strongylus* Spp. Attributed to Phenothiazine

| Equine | Breed | Age | Eggs per gramme | | | Dose and date | Differential counts | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Before treatment | After treatment | When next cultured | | Before treatment | | When next cultured | |
| | | | | | | | % others | % Str. spp. | % others | % Str. spp. |
| 1 | T.B. f. | 3 | 2,500 | 1 | 107 | 2 at 20 g., 9 & 11/12/52 | 70 | 30 | 3 | 97 |
| 2 | Welsh X f. | 1 | 351 | 0 | 183 | 10 at 1 g. daily 1 at 15 g., 18/12/51 | 98 | 2 | 8 | 92 |
| 2 | „ f. | 1 | 600 | 10 | 141 | 1 at 15 g., 21/6/52 | 86 | 14 | 6 | 94 |
| 3 | „ m. | 1 | 1,000 | 6 | 116 | 1 at 15 g., 21/6/52 | 82 | 18 | 18 | 82 |
| 4 | Apal. m. | 10 | 1,200 | 1 | 110 | 2 at 15 g., 22 & 24/6/52 | 95 | 5 | 73 | 27 |
| 4 | „ m. | 10 | 110 | 5 | 252 | 2 at 10 g., 14 & 16/3/53 | 73 | 27 | 30 | 70 |
| 5 | Shetland f. | 5 | 203 | 116 | 116 | 1 at 15 g., 12/3/53 | 100 | 0 | 57 | 43 |
| 6 | T.B. f. | 18 | 125 | 1 | 192 | 2 at 15 g., 31/1/53 & 2/2/53 | 95 | 5 | 50 | 50 |
| 7 | Hunter f. | 22 | 700 | 1 | 292 | 2 at 20 g., 31/1/53 & 2/2/53 | 100 | 0 | 85 | 15 |
| 8 | T.B. f. | 5 | 600 | 4 | 129 | 2 at 20 g., 7 & 9/11/52 2 at 10 g., 31/1/53 & 2/2/53 | 98 | 2 | 52 | 48 |
| 9 | „ f. | 19 | 1,000 | 2 | 227 | 2 at 20 g., 31/1/53 & 2/2/53 | 94 | 6 | 84 | 16 |
| 9 | „ f. | 19 | 227 | 2 | 186 | 2 at 15 g., 28 & 31/3/53 | 84 | 16 | 52 | 48 |
| 10 | „ geld. | — | 500 | 3 | 500 | 2 at 20 g., 7 & 9/3/53 | 98 | 2 | 84 | 16 |
| 11 | „ f. | 16 | 194 | 1 | 151 | 2 at 20 g., 7 & 9/3/53 | 90 | 10 | 10 | 90 |
| 12 | „ f. | 12 | 3,000 | 207 | 207 | 1 at 30 g., 23/8/52 | 84 | 16 | 9 | 91 |
| 13 | „ f. | 3 | 263 | 5 | 162 | 2 at 12 g., 7 & 11/11/52 | 85 | 15 | 75 | 25 |
| 13 | „ f. | 3 | 364 | 0 | 280 | 1 at 20 g., 28/2/53 | 69 | 31 | 34 | 66 |
| 13 | „ f. | 3 | 600 | 0 | 141 | 2 at 15 g., 3 & 4/6/53 | 37 | 63 | 27 | 73 |
| 14 | „ f. | 10 | 2,800 | 342 | 342 | 1 at 15 g., 21/6/52 | 84 | 16 | 46 | 54 |
| 15 | „ f. | 10 | 1,000 | 0 | 145 | 2 at 20 g., 22 & 23/2/53 | 99 | 1 | 64 | 36 |

All animals have been dosed with phenothiazine, either in single doses or two doses on successive or alternate days. Animal No. 2 had 10 daily doses of 1 gramme, starting on December 18th, 1951, plus 15 grammes on that day.

m. = male ; f. = female ; geld. = gelding ; T.B. = thoroughbred ; Apal. = Appaloosa.

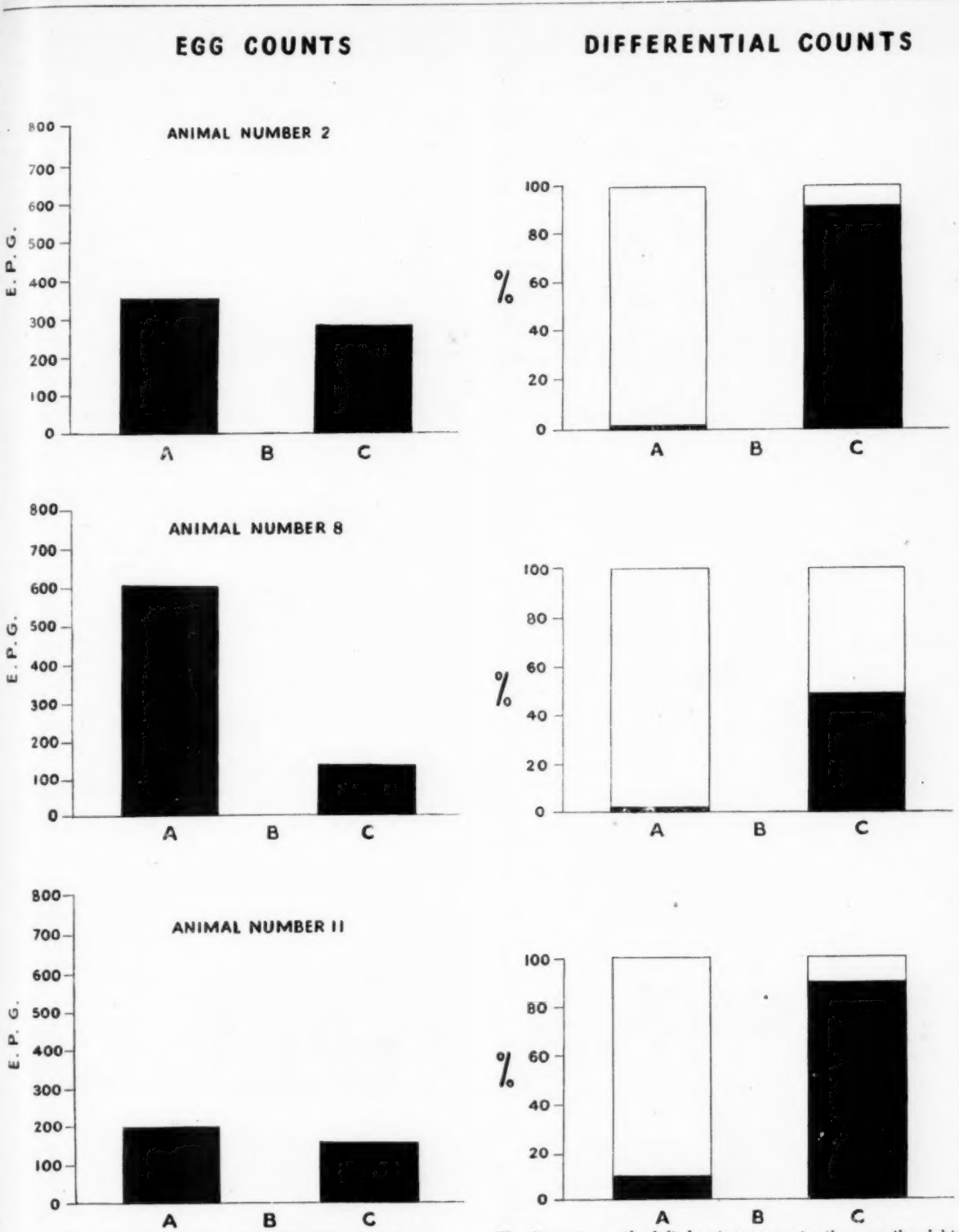


FIG. 1.—EGG COUNTS AND DIFFERENTIAL COUNTS. Results are given for three animals. In all cases:—

A—result prior to dosing.
B—result after dosing.
C—result when next cultured.

The diagrams on the left denote egg counts, those on the right denote percentage larval counts; in the latter the black portions show the percentage of *Strongylus* spp., the white portions the percentage of other species present. The relative increase in *Strongylus* spp. is clearly seen.

an immediate culture of the faeces to be carried out. In each case a rise in percentage of *Strongylus* spp. was seen. This invalidates the hypothesis that phenothiazine kills all strongyles in the same proportion, the rise in *Strongylus* spp. eggs seen afterwards being explained by assuming that *Strongylus* spp. parasites undergoing migration were sheltered from the drug, whilst it attacked the " small strongyles " undergoing phases of development in the mucous and submucous layers of the large intestine. This would lead to an eventual rise in *Strongylus* spp. but not to an immediate rise, as has been demonstrated.

There can be no doubt then that phenothiazine in the doses used had a selective effect upon the horse strongyle population, a greater mortality occurring amongst the " small strongyles." This in itself would lead to a higher percentage of *Strongylus* spp. eggs. It may tentatively be suggested that as the " small strongyles " have a relatively greater surface area than the larger *Strongylus* spp. they are able to obtain relatively more of the phenothiazine or its breakdown products and hence are more susceptible to the drug.

It has been established by Todd *et al.* (1950) that phenothiazine fed to horses reduces the fertility of strongyle eggs passed in their faeces and this may be partially responsible for the results obtained, as the effect may be more pronounced upon the " small strongyles." Phenothiazine also reduces egg laying in strongyles and this reduction may persist for a longer time in " small strongyles " than in *Strongylus* spp., a phenomenon which would also contribute to the observed results.

Of all the factors postulated which may combine to produce the results shown in this paper, there can be no doubt that the primary factor is the greater mortality amongst " small strongyles." In any event the end result is an increase in the percentage of *Strongylus* spp. as determined by differential larval counts. This does not imply that there is an absolute increase of *Strongylus* spp. for since the egg count usually falls after dosing the total number of *Strongylus* spp. eggs passed also usually falls. However, when the worm egg count is again building up, that is, when it is at 100 eggs per gramme, or above, then the number of *Strongylus* spp. eggs may show a definite increase over its value before dosing. The period during which the percentage of *Strongylus* spp. eggs remain high in the faeces is variable but during this time there can be no doubt that an effect beneficial to the selection of the clinically dangerous parasites is operating.

The parasitic eggs when voided from the host hatch and the larvae proceed through a series of changes until they become third stage infective larvae. Now it follows that the " small strongyles " and *Strongylus* spp. larvae, provided there is a limit of food resources, will be in a state of indirect competition; that is, although they may not

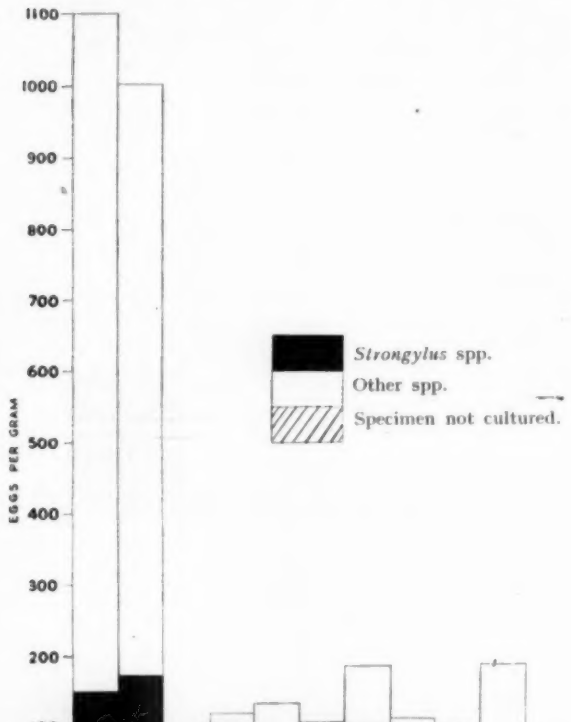


Fig. 2.—Extended Observations on Animal Number 3.

The columns denote the egg counts for the months April, 1952, to January, 1953. These are divided into sections showing the number of *Strongylus* spp. and the number of other species. 15 grammes of phenothiazine were given at the end of May and it is seen that this produces an increase in the percentage of *Strongylus* spp. but a decrease in the absolute number of *Strongylus* spp.

*Animal Number* 3.—Showing decrease in total numbers but increase in percentage of *Strongylus* spp. after dosing with phenothiazine.

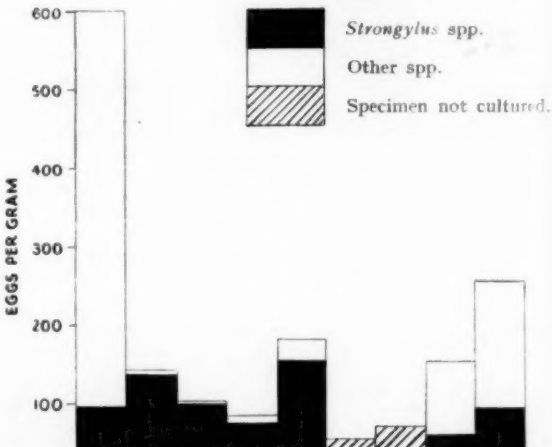


Fig. 3.—Extended Observations on Animal Number 2.

In this case the administration of 15 grammes of phenothiazine at the end of June has caused an absolute as well as a relative rise in *Strongylus* spp., the opposite of that shown in Fig. 2.

*Animal Number* 2.—Showing variation in percentage and absolute rise of *Strongylus* spp. after phenothiazine.

directly interfere with each other, they will have to compete for all available favourable resources of the environment. It follows then that phenothiazine dosing tends to break down this indirect competition giving an advantage to *Strongylus* spp.

There can be no doubt that phenothiazine in sufficient doses causes death in the strongyle population, bringing about a phase of decreasing numbers. Assuming all members of the population are subjected to the same amount of phenothiazine, it follows that the population that survives will be a selected and not a random sample. Those parasites which are resistant will survive and consequently any advantageous mutation which they may possess will now be present in a greater proportion of the population and will, therefore, have spread. It is also a well-known biological fact that in a dangerous environment a more rapid evolution and consequently a closer adaptation will be found, for such adaptation must occur if animals are to survive the adverse conditions.

From Gibson's work (1950, 1953) and from the evidence provided by this paper, it is concluded that phenothiazine, when given in doses around 30 grammes for a 1,000 lb. horse in good health, may have little effect upon the *Strongylus* spp. adults. It must be recalled that 40 out of 74 horses have been observed at Newmarket to show the rise in the percentage of *Strongylus* spp. at differential larval counts after dosing. The other 34 showed no such rise, the differential picture remaining much the same after dosing as it was before. In attempting to explain this, several possibilities present themselves.

The first might be that the 34 animals were not infected with *Strongylus* spp. but in every case larval cultures revealed that members of these species were present and so this, the most obvious explanation, is not applicable.

The second explanation is dependent on the speed with which *Trichonema* spp. larvae undergoing histotropic stages in the mucous layers of the large intestine are able to establish themselves as mature specimens in the lumen, once phenothiazine has reduced the previously established individuals. It is conceivable that this could happen before the next differential count was performed. In this event the 34 horses showing no rise in *Strongylus* spp. would be those in which a high proportion of larval *Trichonema* spp. were present in the histotropic stage. The 40 showing the rise would be horses with few small strongyles undergoing this phase of development. Future *post-mortem* examinations may clarify this possibility.

A third explanation demands the assumption that some populations of *Strongylus* spp. are more resistant to the drug than others. Those horses showing a subsequent relative rise of this species after dosing may have been hosts to a resistant population whilst those showing no relative rise may have harboured a population of *Strongylus* spp., which were attacked by the drug. Gibson (1950) believes that the high efficiency against the larger strongyles reported by previous workers must have been referable to the higher dosage employed by them. It is, however, conceivable that *Strongylus* spp. are developing a resistance to phenothiazine which is only seen, at present, in the populations within some of the hosts. Such a phenomenon would be unusual in helminthology, but since tolerance to drugs has occurred in other biological groups, it is not inconceivable that it might occur in parasitic worms.

## Summary

1. In 40 out of 74 horses given phenothiazine in varying doses a rise in the percentage of *Strongylus* spp., as determined by larval differential count, was demonstrated.

2. This effect is transitory, the small strongyles eventually accounting, as they did before dosing, for the majority of larvae seen.

3. Phenothiazine is the drug of choice for the small strongyle parasites of horses but its efficiency against the large strongyles is considerably less.

*Acknowledgments.*—Thanks are due to the Director and staff of the Equine Research Station for their helpful suggestions and criticisms.

## References

Gibson, T. E. (1950). *Vet. Rec.* **62.** 341-2.
———. (1953). *J. Helm.* **27.** 29-40.
Gordon, H. Mc.L. (1952). Publication of Graduate Committee on Horse Breeding and Management, Australia—1. The Bloodworm, *Strongylus vulgaris*.
Grahame, T., Sloan, J. E. N., & Morris, P. G. D. (1942). *Vet. Rec.* **54.** 213-214.
Harwood, P. D., Habermann, R., Roberts, E., & Hunt, W. (1941). *North Am. Vet.* **22.** 85-92.
Hatcher, W. L. (1941). *Ibid.* **22.** 159-160.
Miller, W. C. (1953). *Vet. Rec.* **65.** 213.
Russell, K. F. (1947). *J. Comp. Path. & Therap.* **58.** 107-127.
Todd, A. C., Hansen, M. F., Kelley, G. W., & Wyant, Z. N. (1949). *Vet. Med.* **44.** 411-414.
———, ———, ———, ———, & Crowdus, D. H. (1950). Bulletin 551, Kentucky Agricultural Exp. Station.

## THE BRITISH VETERINARY CODEX

### Committee Entertained by the Pharmaceutical Society

On the evening of February 2nd a distinguished gathering of veterinarians, pharmaceutical chemists, and others dined at the Hotel Russell as guests of the Council of the Pharmaceutical Society of Great Britain. The publication of the British Veterinary Codex has brought to an end the work of the British Veterinary Codex Committee and its sub-committees, and the Council of the Pharmaceutical Society decided to mark the occasion by inviting all those who had assisted with the production of the Codex to an informal dinner.

At this convivial occasion the guests greatly outnumbered the hosts, and everyone thoroughly enjoyed the warm-hearted and generous hospitality of the Pharmaceutical Society. After the dinner the President of the Pharmaceutical Society, Mr. Heseltine, thanked the members of the Committee and its sub-committees for all the hard work they had put in to the production of this valuable book of reference and mentioned, in particular, the work of the Editor, Dr. Capper, and of the various chairmen of the sub-committees. He then called upon each of the chairmen of the sub-committees in turn to speak.

All the veterinary speakers, and these included Dr. Montgomerie, Dr. Carmichael, Professor Glover and Mr. Thomson (President of the B.V.A.), spoke very highly of the happy atmosphere in which they had worked on the various committees and of the efficient organisation of the Pharmaceutical Society working behind the production of the Codex. Professor Glover, President of the Royal College of Veterinary Surgeons, thanked the Council of the Pharmaceutical Society for their kind hospitality and spoke very warmly of the good fellowship and co-operation he had found in his dealings with their Society. Mr. Thomson, the President of the British Veterinary Association, referred to the British Veterinary Codex from the "consumer angle." Speaking as a practising veterinary surgeon and a teacher, he had a double welcome for this book; there had been no adequate reference book on materia medica and this filled the gap. It was an excellent production which would greatly lighten the work of teaching

During other speeches it was disclosed that already over 2,700 copies of the Codex had been sold, and many enquiries were coming in from overseas.

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# HAEMANGIOMA OF THE SCROTUM OF DOGS

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Haemangiomatosis of the scrotum of dogs is a condition characterised by the formation of small plaques on the scrotal skin which may become ulcerated and give rise to relatively profuse haemorrhage. This syndrome is seen frequently in small-animal practice and many veterinary surgeons are familiar with it; it is sometimes called "varicose tumour of the scrotum" but there is no accepted terminology. There does not appear to be any description in the veterinary literature of the clinical and pathological features and the treatment of this lesion.

## Clinical Features

The lesions are usually seen in dogs past middle age and are particularly common in breeds with pigmented skin, such as Scotch Terriers, Airedales, Kerry Blues and Labradors. Clinically, it is possible to recognise definite stages in the development of the lesion. The earliest stage is the appearance of localised pigmented areas on the surface of the scrotum. Many of these remain static but some progress to the next stage; this consists of a small plaque which is raised above the surface of the epithelium and which is usually heavily pigmented. At the same time there is the development of an artery which runs laterally to the dartos and traverses the area from the neck of the scrotum to the base of the lesion. This artery is much larger than one would expect to find supplying the relatively small lesion and the volume of the pulse is comparable to that of the femoral artery in the dog. The cutaneous lesion may remain at this stage for some time and several lesions may be present in the same case, but some of them become ulcerated and haemorrhage ensues. In most cases the haemorrhage appears to be caused by trauma; the bleeding is of the arterial type, the blood spurting from the wound. The crater of the ulcer which now develops is lined with dark blood clot; this may break down and haemorrhage recommence. In protracted cases the ulcer has a raised everted and translucent edge. The haemorrhage may be intermittent over a period of days or weeks and anaemia may supervene. Occasionally one is consulted at this stage, not because the owner suspects the presence of a lesion on the scrotum, but because the dog has vomited large quantities of clotted blood swallowed from the lesion. Cases have been observed where the animal died as a result of repeated haemorrhages. In some cases there are several lesions and in a proportion of these the entire scrotum becomes oedematous and may be four or five times the normal size.

## Pathology

The essential pathological change is the presence in the skin of areas of cavernous vascular tissue. Foci of this tissue may be called haemangiomata but, as will be shown below, there is considerable doubt as to whether they are true neoplasms.

Several distinct stages in the development of the mature lesion can be distinguished.

1. At several parts immediately under the epithelium aggregates of collapsed capillaries or vasoformative tissue can be seen. There is a minimal amount of stroma and the vascular lumina contain no blood. There may or may not be excessive melanotic pigmentation over these foci.

2. The next stage appears to be dilatation of these capillary channels with blood to form fairly large capillary haemangiomas (Fig. 1). These latter extend from the subepithelial tissue to the level of the root of the hair follicles. The overlying skin usually contains an excess of melanophores but the epithelial surface shows no marked projection above the normal level. The vessels are lined with low endothelium similar to that of a normal capillary. The supporting stroma is small in amount and fine in texture.

3. The fully developed lesion is a cavernous haemangioma. This consists of many large irregularly branching and communicating spaces filled with blood (Fig. 2). The lining is usually a fairly regular endothelium which lies on a well-developed and often quite thick fibrous stroma (Fig. 2). Amongst the cavernous spaces can be found small arterioles. The overlying epithelium is usually projecting above the normal level and may be ulcerated (Fig. 3). The skin around this point is heavily pigmented (Fig. 4) and the melanin-containing cells may extend for a considerable depth and may be found infiltrating between the subjacent muscle fibres (Fig. 4). There is no apparent neoplastic process involved and this is thought to be a purely local melanosis.

The cavernous areas may extend quite deeply into the underlying muscle and may have the appearance of active neoplastic infiltration. This is due to the presence, at the edge of the cavernous areas, of foci of vasoformative tissue as described above (Stage 1) and the apparent infiltration is due to canalisation of this tissue and its distension with blood.

The scrotal skin may contain in addition to well-developed angiomas, many areas of Stage 1 tissue and the development of this probably accounts for the "recurrence of tumour" after a mature lesion has been surgically removed.

In one case, however, we did find evidence of abnormal cellular division. In one area of cavernous tissue active endothelial proliferation was present with the formation of multinucleated cells. The significance of this as indicating incipient neoplasia is uncertain.

## Treatment

When haemorrhage first takes place, the application of a simple styptic is a suitable first-aid treatment. Ordinary house flour dredged on to the lesion will check the haemorrhage until surgical treatment can be applied. This is carried out by the application of a simple transfixation ligature using silk, linen or cotton. The area is infiltrated with local anaesthesia and a fine needle used to ensure that the ligature is carried above the artery. Unless a sufficiently large bite of skin and tissue is included in the ligature, a recurrence is almost sure to follow. Recurrence of haemorrhage may be due to several causes: the ligature may not have been laid sufficiently deeply or it may slip or be chewed out by the dog, or more often a belated recurrence may be associated with the development and ulceration of the new lesion.

Where many lesions are present it is often desirable to remove the entire scrotum with or without castration. As this radical operation is liable to be followed by gross obesity, steps are usually taken to allow the preservation of one or both testicles. This may be done by making an antero-lateral bag of skin and pushing the testicle forward prior to closing the wound. An alternative technique is to make a flap in the skin inside the flank and to oversuture.

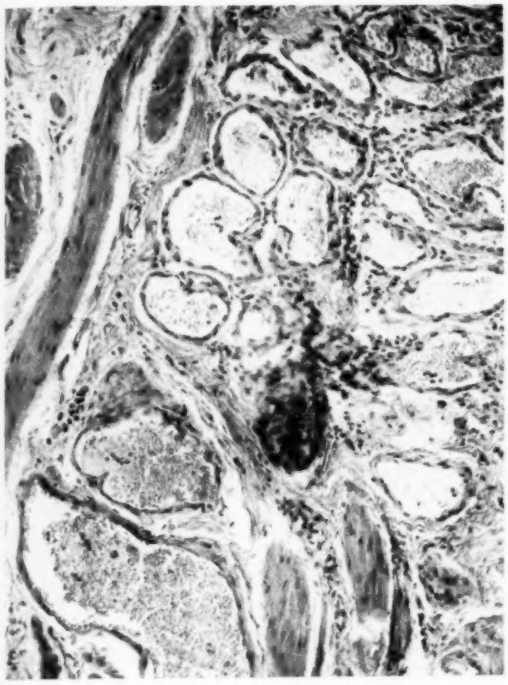

FIG. 1.—The developing lesion (Stage 2). Capillary haemangioma with regular thin walled vessels. H. & E. × 100.

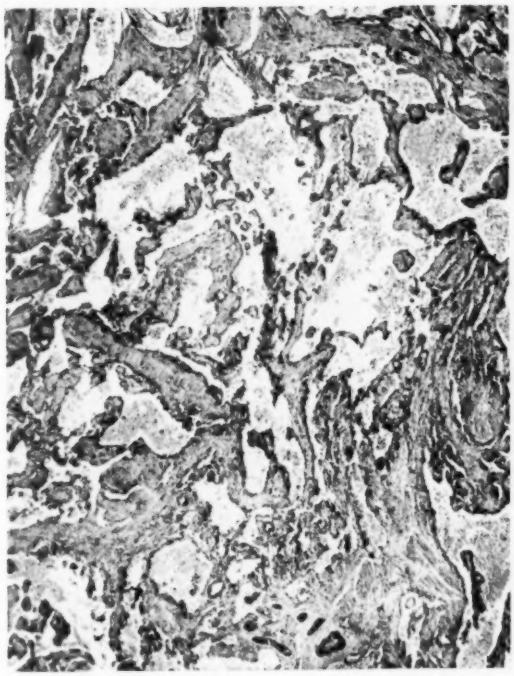

FIG. 2.—The mature lesion (Stage 3). Cavernous haemangioma with irregularly branching vascular channels. H. & E. × 60.

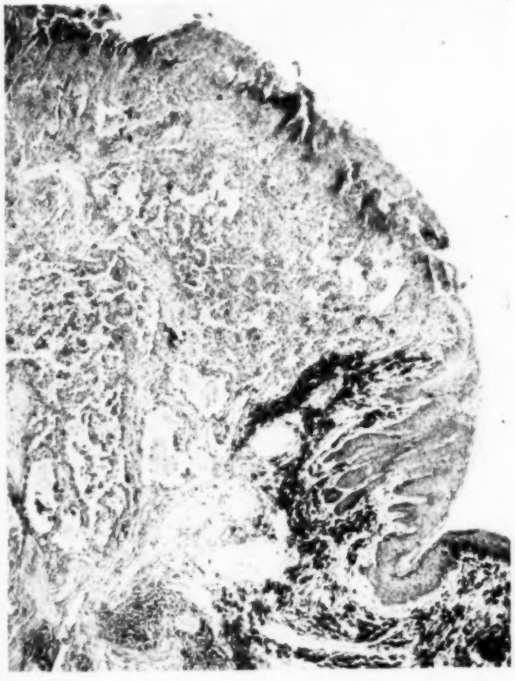

FIG. 3.—Ulceration of a mature lesion. H. & E. × 30.

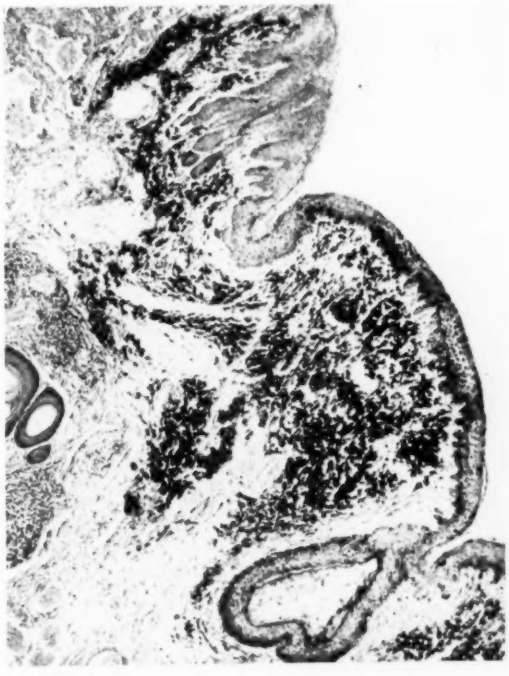

FIG. 4.—Heavy sub-epithelial melanotic pigmentation overlying a lesion. H. & E. × 40.

### Discussion

These swellings are probably better regarded as hamartomas or growth anomalies, rather than true neoplasms. This also applies to many human haemangiomas. Cappell (1951) discussing these, states, " . . . angiomata often remain little altered in size and are thus to be regarded more as abnormalities in growth rather than as true tumours; sometimes, however, they enlarge out of proportion to the rest of the body and this would appear to be due to increase and enlargement of their own vessels rather than to dilatation of the vessels around." He also states that " Each angioma has its own artery of supply and venous drainage but it has been found by injections that there is little or no connection with the surrounding vessels." Willis (1948) illustrates areas of incompletely formed vasoformative tissue very similar to that in canine cases, and he considers that apparent extension occurs due to canalisation of such tissue. In these respects the human and canine lesions appear to be identical.

No evidence of intrinsic malignancy has been found in these tumours. As has been stated above, apparent local invasion is due to the canalisation of vasoformative tissue at the periphery of a well-developed lesion and to increase in the blood content in the haemangioma. " Recurrence " of the " tumour " can be accounted for by (*a*) incomplete ligaturing of the artery of supply, (*b*) the ulceration of other lesions, (*c*) the development of new haemangiomas from islets of sub-epithelial vasoformative tissue.

This condition, in our experience, is strictly limited to the skin of the scrotum. No spread to contiguous skin has been observed either before or after surgical treatment. In every case where the whole scrotum has been removed no further trouble occurred.

#### References

Cappell. (1951). " Muir's Text-book of Pathology." London.
Willis. (1948). " The Pathology of Tumours." London.

## CLINICAL COMMUNICATION

## A UROGENITAL ANOMALY IN THE CAT

K. J. HILL,
Agricultural Research Council, Institute of Animal Physiology, Babraham, Cambridge

*Subject.*—A black and white female kitten, *circa* three months old. Weight 3½ lb. Presented for spaying.

*Previous History.*—Uneventful.

*Operation.*—The animal was anaesthetised with intravenous nembutal. (Abbott's Veterinary Nembutal 1 grain/c.c. 0·35 c.c.)

Using the normal left flank incision, the left ovary and uterine horn were exposed and the ovarian pedicle severed between haemostats.

The left horn was followed caudally to locate the uterine bifurcation but despite careful search and extension of the original incision neither the bifurcation nor the right horn could be located. After 30 minutes' fruitless search the left horn was severed as far caudally as possible and removed with the left ovary. The abdominal incision was closed and the cat placed in warm surroundings for the night. The following morning the cat was found dead.

### Post-mortem Findings

Apart from slight hypostatic congestion in the right lung the viscera appeared to be normal. There was no evidence of haemorrhage from the ovarian pedicle or from the severed horn; the actual cause of death therefore remains unknown. Further examination revealed that the right uterine horn, the right kidney and the right ureter were absent. The left kidney (1⅝ inch by 1⅛ inch, fixed) appeared to be large for the size of the animal but on section was of normal appearance. The right ovary was present in its normal position but was rather smaller and more elongated than the left one. Histological examination revealed the presence of numerous follicles in various stages of development. A small portion of fallopian tube was also found adherent to this ovary.

### Discussion

Developmental abnormalities of the genital and urinary tracts are not uncommon in man and animals (Arey, 1944) but it is unusual to find both systems involved in the same animal although, in view of their intimate embryological association, such cases might be expected to occur.

Both systems arise from mesoderm as a pair of common urogenital ridges but it is in the development of the reproductive ducts that the close association of reproductive and urinary systems is most evident. The primordial structures, the Müllerian ducts, from which the fallopian tubes, the uterus and part of the vagina arise, lie alongside the primitive kidney (mesonephros) and it is possible phylogenetically that they arise directly from the mesonephric ducts (Patten, 1931). Failure of the primordium of the urogenital ridge to appear or to develop to a significant degree (agenesis) would lead therefore to absence or incomplete development of the kidney, ureter and the reproductive tract. As a small portion of fallopian tube had developed in the kitten described above, agenesis of the urogenital ridge would appear to have been incomplete. The primordia of the gonads arise independently as thickened mesodermal epithelium at the anterior end of the urogenital ridges and their development would not be affected therefore by agenesis of the urogenital ridge.

### Summary

A case of congenital absence of the right kidney, ureter and uterine horn in the cat is described and the embryological basis of this condition briefly discussed.

#### References

Arey, L. B. (1944). " Developmental Anatomy." Fourth edition. W. B. Saunders Co., Philadelphia and London.
Patten, B. M. (1931). " The Embryology of the Pig." Second edition. P. Blakistons's Son & Co., Ltd.

### 1955 OLYMPIC HORSE TRIALS

It has just been announced that the Queen has invited the British Horse Society to present the 1955 Olympic Horse Trials in Windsor Great Park. Her Majesty's gracious invitation has been most gratefully accepted. The provisional dates have been fixed for the week commencing May 16th, 1955. The Duke of Beaufort has been invited by the Council of the Society to act as Director of the event and has appointed Colonel Sir Henry Abel Smith as organiser. The Trials will take place at Badminton this year and will return to Badminton in 1956.

## MEMOIR

# DR. F. C. MINETT

Francis Colin Minett was born in 1890 and was educated at King Edward's School, Bath, and the Royal Veterinary College, London, where he obtained his M.R.C.V.S. Diploma in 1911, and the B.Sc. of London University in the following year. In 1912 he was awarded a Ministry of Agriculture and Fisheries Research Scholarship which he held until 1914, spending part of this period at the Pasteur Institute in Paris and the remainder at the Royal Veterinary College, where he joined M'Fadyean and Sheather in their researches on bovine contagious abortion and tuberculosis.

In 1914 he joined the R.A.V.C. serving in France, where he gained the M.B.E., and afterwards in Egypt and

England until he retired in 1924. During this period he used what opportunities were available for investigational work, publishing articles on diphtheria bacilli in the horses, diphtheroid bacilli from animals, immunological studies on the Preisz-Nocard bacillus and the ulcerative lymphangitis which was a serious problem in horses in France during the First World War, and also, whilst in Egypt, an investigation of certain claims to have cultivated the rinderpest virus *in vitro* which foreshadowed the painstaking experimental and critical abilities he was to show so strikingly later. He retired from the Army with the rank of Captain.

In 1924 he was appointed as a Research Officer at Weybridge, where he worked for the next three years on behalf of the Foot-and-Mouth Disease Research Committee on various aspects of that disease, the typing of the virus in guinea-pigs (then a new development), the survival of the virus in chilled and frozen carcases, disinfection (it was Minett who showed the value of formalin sprays for the disinfection of surfaces of ricks, etc.) and various aspects of immunity on which was based the thesis which gained him his D.Sc. in 1928. He was also largely responsible for the Second Report of the Foot-and-Mouth Disease Research Committee.

In 1927 Minett was appointed Director of the Research Institute in Animal Pathology of the Royal Veterinary College, London, a post which he held until 1939, and it was during this period that his most important contributions to our knowledge of animal diseases were made. The first subject of study and one in which he maintained a profound interest was bovine mastitis, the well-known series of studies made in collaboration with his younger colleagues Stableforth and Edwards lasting over the next 10 years and covering the bacteriology of the disease, the diagnosis of the various forms, the loss of milk yield concerned, the possibility of eradicating the chronic form caused by *Str. agalactiae*, the infection responsible for outbreaks of disease in man and a number of other aspects. These studies did a great deal to clarify the existing knowledge of the disease and stimulated mastitis research in many countries. It was characteristic of Minett that, when it came to distinguishing the various streptococcal organisms concerned, he preferred to call them groups I, II and III rather than give them names. And although these groups are now known by the names *Str. agalactiae*, *Str. dysgalactiae* and *Str. uberis*, the terms groups I, II and III were almost universally used for many years. During this period Minett also wrote a number of review articles on mastitis which remain models of clarity and conciseness. He took immense pains with his articles and would always put them away for a while if time allowed—and it usually did, because he always started in good time.

In 1930 Minett took up the study of Johne's disease, publishing papers dealing with the prevalence of the disease, the value of Johnin in diagnosis and methods for its detection *post-mortem*. At this time he again became interested in various aspects of tuberculosis and his publications included papers on avian tuberculosis in Great Britain, on the survival of tubercle bacilli on pasture, on the prevalence of tuberculosis in milk (with E. J. Pullinger) and on the nutritive value of raw and pasteurised milk for calves (with G. S. Wilson and H. F. Carling).

Other subjects of study during this period included an experimental enquiry into sewage poisoning in cattle (with G. H. Wooldridge and A. L. Sheather), staphylococcus infections in animals (characteristically including experiments on himself and his family and colleagues to see whether the staphylococci produced enterotoxic symptoms) and streptococcus infections in dogs.

In 1932 Minett became Professor of Pathology in the Royal Veterinary College, combining the duties of this chair with those of Director of the Institute, and taking on the teaching of general pathology and virus diseases. He was also responsible from 1928 to 1938 for the article on Animal Diseases in the "Farmer's Guide to Agricultural Research" published annually by the Royal Agricultural Society and during the same period contributed the chapter on Glanders, of which he had experience in both France and Egypt, to the "System of Bacteriology" published by the Medical Research Council in 1930, and the article on Mastitis in the "Encyclopaedia of Veterinary Medicine" edited by G. H. Wooldridge.

Although Minett had no particular fondness for committees, he did his part and was from 1931 to 1939 a member of the Agricultural Research Council Committee on "*Brucella abortus* infections in animals and man," on "Johne's disease in cattle and sheep" and on "Fowl

paralysis and similar diseases and coccidiosis." His work brought him many acquaintances in medical and dairy circles, and earned him the highest regard for the quality of his work. He was well known abroad as well as at home and contributed a number of important papers to international congresses.

While in India he was made Foreign Corresponding Member of the Royal Academy of Medicine of Belgium and of the Veterinary Academy of France. He left for India in August, 1939, to take up the post of Director of the Imperial Veterinary Research Institute (now the Indian Veterinary Research Institute), Mukteswar, and except for one short break to attend to urgent domestic affairs in England, he continued in this post throughout the War and until the separation of the sub-continent into India and Pakistan in 1947.

Minett soon found himself involved in the many administrative problems, which have always been associated with this exacting post, and although he did not steer clear of trouble altogether, he was wise enough to leave much of the administrative work to some able lieutenants, whom he found already on the staff when he joined it.

He was thus able to devote some of his time to personal research and in particular he took up the study of climatological influences on the body temperature and milk yield of animals and on the development of sporulating organisms like *B. anthracis* and *Cl. chauvoei*, both in the live and dead animal. He was also interested in and published two papers on the so-called panting in cattle, a common sequel of foot-and-mouth disease in the tropics. In 1945 he was created C.I.E.

In 1947 Minett had to choose between remaining on as Director of Mukteswar, which fell into the Indian portion of the sub-continent, or accept the post of Animal Husbandry Commissioner which was offered to him by the Pakistan Government. There were those who regretted that he chose the latter course, but he seems to have been influenced by the fact that one of his duties with the Pakistan Government would be to set up a satellite institute for the investigation of animal diseases within the boundaries of this new State. Unfortunately, difficulties arose in obtaining approval of the site selected by Minett for this institute, so, as his 10-year contract with Indo-Pakistan was completed, he decided to return to this country, which he did in 1949.

In 1950 he was appointed Director of the Farm Livestock Station of the Animal Health Trust, but shortly after was, at the request of the Foreign Office, released by the Trust to go to Turkey to advise the Government of that country on diseases of animals. He returned to England in 1952 and took up the direction of the Livestock Research Station, working himself on certain aspects of Johne's disease and diseases of young pigs, until the end came on December 26th, 1953.

Most men have some outstanding personal characteristic, something which shows through everything they do—even though it be their very poise or the balance of their qualities. With Minett it was his efficiency. It coloured everything he did and was part of him from the time the writers first knew him until long past the time when serious illness would have caused most men to let things take their course. And with it went great ability to organise his work. He considered early, he saw clearly, he acted with courage. It was an experience to work with him. He had no time for sophistry or pretence and was sometimes intolerant; but he could not always be otherwise by his lights.

And all of Minett came out in his last months. He knew his life was nearly over, he planned his time, he finished the jobs he had undertaken, he said the good word for those he thought deserved it. And he never complained of his lot; he even moved house two days before he died. His work is standing the test of time, but perhaps his greatest contribution to science is the influence of his integrity, his precision of thought and his energy on those around him.

F. W. & A. W. S.

## ABSTRACTS

### Use of Antrycide in Trypanosomiasis of Cattle *

These two articles are an abbreviated review of work done under a grant from the Colonial Welfare and Development Fund, being an extension of the preliminary work undertaken by Davey and others. The work can be divided into three periods :—

1. March, 1949, to March, 1950.—Studies on Davey's cattle maintained at his original field station at Kiboko, an area infested with *Glossina pallidipes*, *G. longipennis* and *G. brevipalpis*. Information was obtained on the pathology of suppressed types of trypanosomiasis and the dangers of dissemination of drug-fast trypanosomes.

2. March, 1950, to March, 1951.—Tests of the prophylactic properties of antrycide given at fixed intervals in tsetse fly country. These trials took place at Mariakani. Work was also done at Kabete on the nature of the prophylaxis given by antrycide.

3. March, 1951, to March, 1952.—Further work at Mariakani on treatment and prophylaxis under field conditions.

These extensive observations which even in their abbreviated form are not easily abstracted, may be summarised best in the author's conclusions.

(1) Improper use of antrycide chloride as a prophylactic may lead to the dissemination of trypanosomes, fast to both antrycide and dimidium.

(2) Under proper conditions of use, antrycide chloride is not dangerous from the aspect of transmitting drug-fast trypanosomes. Furthermore, there is evidence that in the case of *T. congolense* drug-fastness may not be a persistent characteristic. It is possible that its dangers have been overestimated and it proved impossible to transmit trypanosomiasis from antrycide-protected cattle, although they appear to have carried a low-grade infection.

(3) Cattle were maintained in country infested with *G. austeni* in apparent health for 28 months ; injections of antrycide chloride/sulphate mixture were given at one-monthly intervals to one group and at two-monthly intervals to a second group. A number of cattle in a third group, which received antrycide at three-monthly intervals, developed trypanosomiasis and the group was discarded.

(4) Scanty and transitory infections with either *T. vivax* or *T. congolense* were diagnosed in blood or gland smears from nine cattle during the course of the experiment. Originally there were 28 cattle, of which 20 survived at the end of the experiment.

(5) There is evidence that, in spite of these apparently favourable results, the cattle suffered from a cryptic form of trypanosomiasis, which was not transmissible. Protection afforded by antrycide, therefore, resulted from the creation of a premunition focus.

* **The Therapeutic and Prophylactic Properties of Antrycide in Trypanosomiasis of Cattle.** Fiennes, R. N. T.-W. (1953). *Brit. Vet. J.* **109.** 280 and 330.

(6) Studies in mice and cattle suggest that the degree of protection afforded by antrycide is dependent on the following factors :—

(*a*) The dose and frequency of repetition of antrycide ;

(*b*) The natural or acquired resistance of the animals treated ; and

(*c*) The intensity of the challenge.

(7) Evidence suggests that antrycide does not destroy the parasites immediately on injection into the body, but inhibits or destroys them at the stage of multiplication at the end of the incubation period.

(8) It has been established that a cryptic form of trypanosomiasis exists in cattle, which is accompanied by anaemia and tissue changes. In these cases, trypanosomes may be demonstrated in the cardiac capillaries ; the majority are in a state of lysis.

(9) Calves showed a markedly higher resistance to trypanosomiasis than did adult cattle. The disease in calves could be controlled by the use of antrycide sulphate as a therapeutic agent. Under such a routine the necessity for treatment became more infrequent as time went on.

(10) Antrycide sulphate was unable to cure all cases of chronic *T. vivax* and *T. congolense* in a single injection ; repeat dosage was effective. This result was probably as good as would have been obtained with any other drug under the very drastic conditions of this experiment.

D. L. H.

* * * * *

## Treatments for Anoestrum in Dairy Cattle*

The methods compared are manual expulsion of the corpus luteum, and injection of gonadotropins and oestrogens.

In the author's experience anoestrum occurs commonly (*a*) following calving or (*b*) may become persistent following one or more oestral periods. In his experiments, a cow was classified as anoestrous if she did not return to service after a period of 30 to 60 days or longer.

Data were collected from six different herds which showed that the percentage of anoestrous cows in the various herds did not vary greatly from the average of the total.

For the experiments four groups of cows were arranged as follows :—

1. Controls.
2. Corpus luteum expelled manually.
3. Stilboestrol given in doses of from 25 to 50 mg.
4. Estradiol cyclopentylpropionate (E.C.P.) given in 6 mg. doses.

Oestrum following treatment with E.C.P. was stronger than that produced by other methods, sometimes lasting 48 hours and in 84·61 per cent. occurring within 10 days. In this group, two returned within two days and both held to service. With the other two treatments 50 per cent. came into season. In the third group no great difference was observed when the dose was increased to 50 mg. except that two receiving this high dose developed cystic ovaries, against one receiving 25 mg.

Cows treated by manual expression of the corpus luteum returned to oestrum in a similar way to the cows receiving stilboestrol and none showed signs earlier than three days.

No animals were culled as a result of any of the treatments discussed.

The percentage of conception up to 30 days was 48·14 after manual expression, 35·70 after stilboestrol and 50 per cent. after receiving 6 mg. of E.C.P.

N. S. B.

* **Comparison of Treatments for Anoestrum in Dairy Cattle.** Lindley, D. C. (1953). *Vet. Med.* **48.** 263–265.

## Treatment of Acetonaemia with "Ketogestin"*

The chemical substance 11-Ketoprogesterone, named by the writers "Ketogestin," differs only from progesterone on the carbon 11 position. It is thus closely related to the hormones of the adrenal cortex.

In a preliminary trial 30 cases of acetonaemia were treated by the subcutaneous or intramuscular injection of this substance in a varying sequence of doses, which was finally established at 1 gramme intramuscularly. In practically all cases the response was immediate. Appetite returned, milk production increased and nervous symptoms disappeared. Complete return to production was accomplished in some cases in three days, though the milk remained Ross-positive for some days to follow.

It is perhaps unfortunate that the writers have accepted a wide definition of the condition, *i.e.*, the 30 cases described embrace eight in which the cardinal symptoms were only anorexia accompanied by marked drop in milk production, 18 in which inco-ordination was noted and only six which exhibited the purely nervous syndrome (in one only the licking reflex was observed). Even so the results claimed for this substance make startling reading. In every case a cure is claimed and a complete absence of relapse. The cost of this product is not given.

J. P.

* **The Treatment of Acetonaemia with "Ketogestin."** Gibbons, W. J., & Wiggins, A. M. (1953). *N. Amer. Vet.* **34.** 478–482.

* * * * *

## Continuous Phenothiazine Therapy for Horses*

In 1948 the authors began a four-year study of the effects of low-level phenothiazine therapy in horses, and previous instalments of this work have already been abstracted. Briefly, the horses on test were given up to 4 grammes of phenothiazine in their daily grain ration. After two and three years of continuous treatment there were no signs of drug toxicity, no signs of anaemia or essential changes in the blood picture, the animals bred normally, and *post-mortem* examinations on eight of the horses revealed no organic lesions ascribable to the treatment. On the positive side, continued control of strongyle parasites throughout the third year was indicated by persistent low or negative faecal egg counts.

During the fourth year of the test the four remaining mares were given phenothiazine at the rate of 2 grammes daily. The mares remained perfectly healthy and each was successfully bred. Faecal examinations were carried out at monthly intervals, and the consistently low or negative counts throughout the fourth year of phenothiazine therapy indicated continued control of the strongyles. There was no evidence of drug-resistant worm species. At the end of the year two mares were sacrificed, and it was therefore surprising to find high numbers of strongyle worms in the gut, *viz.* :—

| | *Totals* | |
|---|---|---|
| | *1* | *2* |
| *S. vulgaris* ... | 22 | 527 |
| *S. edentatus* ... | 0 | 63 |
| *S. equinus* ... | 0 | 2 |
| Cylicostomes ... | 7,100 | 9,175 |

Many of the adult female strongyle worms were examined microscopically for the presence of eggs *in utero*, and none was observed to contain any, a finding in marked contrast to what was found when strongyle worms from two control horses were examined. Thus the authors confirm the

* **Continuous Phenothiazine Therapy for Horses.** Drudge, J. H., Wyant, Z. N., & Elam, G. W. (1953). *Vet. Med.* **48.** 306–310.

inhibitory action on egg production by strongyles in horses on low-level phenothiazine therapy, but this treatment in the doses used proved relatively ineffective in removing mature strongyles from the intestines. It is also doubtful if it can prevent the development of mature worms from infective larvae. The recovery of immature forms of *S. vulgaris* from aneurisms in the anterior mesenteric arteries of the mares indicated failure in this respect.

W. L. S.

## REVIEW

[**Diseases of Livestock.** Third edition. (1953). T. G. Hungerford, B.V.Sc., N.D.A. Pp. 660. Grahame Book Co., Sydney, N.S.W. Price 65s.]

This book is not easily reviewed unless the divers readers for whom the book is intended are kept in mind. According to the preface the subject matter was originally intended for the use of agricultural students, graziers, extension workers and other non-veterinarians. It was found that earlier editions were widely used by veterinary surgeons and in this edition the subject matter has been amplified to include much information of a technical nature. These divergent objectives have inevitably resulted in certain weaknesses and it is unlikely that the author's wish "that its inclusion (*i.e.*, technical information) will not confuse the farmer" will be fulfilled. As a result the text is a mixture of simplified wording and technical jargon which makes for some very uneven reading. The arrangement of the book consists of six chapters on diseases of the different domestic animals, sheep, cattle, pigs, cats and dogs, horses and goats, and there are also general chapters on parasitology, deficiency diseases, general diseases and poisonings. There are a number of good photographs. However, the book is written to cover Australian problems and conditions of geography and veterinary man-power make it inevitable that stock owners must treat many conditions in that country which it is undesirable and unnecessary for them to do here. Provided the limitations of the book are realised it will be found to contain a very considerable amount of information, including recent additions to knowledge, of value to the veterinary surgeon.

## DRIVE AGAINST WOOD PIGEONS

### Big Shoots Organised in Yorkshire

A concerted offensive against the wood pigeon—a bird which the National Farmers' Union call "the grey pickpocket who yearly robs the farmer and the nation of many thousands of pounds"—began on February 5th in Yorkshire and will be continued in other counties.

Painfully aware of the fast rising wood pigeon population, the Ministry of Agriculture, the N.F.U. and the Country Landowners' Association have recognised the value of a drive against the bird from early February until the middle of March. Last year flocks of wood pigeons devoured wheat, barley, oats and peas, and thousands of acres of cereals had to be resown.

The shoot went on in Yorkshire from mid-morning until dusk, and almost every wood was covered. Four hundred thousand cartridges had been distributed to leaders of shooting parties and thousands of guns were out.

* * * * *

## MINISTRY OF AGRICULTURE, DIVISIONAL OFFICE AT NORTHAMPTON

The Ministry's Divisional Office at Northampton has been moved to Government Buildings, Gladstone Road, Northampton. The telephone number is now Northampton 3506.

## QUARTERLY MEETING OF COUNCIL, B.V.A.

### Summary of Proceedings

The Council of the B.V.A. held its Quarterly Meeting on January 22nd, 1954, with the President, Mr. Alexander Thomson, in the chair. After receiving the lists of resignations, deaths and applications for membership, the General Secretary reported that the number of members in the Association now stood at 3,941.

### Reports of Committees

*Veterinary State Medicine*

In the Committee's report reference was made to the Association's Memorandum on Meat Production and Control which was now being considered by the Ministries of Agriculture, Food and Health. Another matter which was raised was the proposed clinical trials of new therapeutic substances for veterinary use; it was agreed that this matter should be brought to the Agricultural Research Council in the first instance as it was felt that it was important that British veterinary surgeons should be in a position to have a knowledge of the use and effectiveness of various new products as they appeared.

*Organising Committee*

The main matter of importance in this report arose in connection with a document which had been circulated on the training of "animal nurses." This had been prepared by a joint committee of the R.C.V.S. and the B.V.A. and was phrased in very broad terms. Council approved the report in principle and understood that there would be further opportunities of giving closer consideration to the details of the scheme.

*Parliamentary and Public Relations Committee*

This report contained reference to a large number of Bills coming before Parliament early in 1954, and Council was informed of action which the Committee proposed to take. A report was made by the Press Officer on his work during the previous quarter and his appointment for a further year was confirmed.

*General Purposes and Finance Committee*

It was formally reported that the headquarters of the Association had now moved to No. 7, Mansfield Street, Portland Place, London, W.1. The staff was complimented on the smooth arrangements made for the actual removal and for carrying on the work at the same time. The death of Mr. William Brown, M.R.C.V.S., Editor of *The Veterinary Record* for 30 years, was also recorded. Tributes had already been paid earlier in Council and in the columns of *The Veterinary Record*, and the Council again expressed its grief at the loss of a very faithful servant.

Arrangements for carrying on the editorial work and for the appointment of a successor were discussed (see under Editorial Committee).

*Technical Development Committee*

There were two reports from this Committee, one of an ordinary meeting and the other of a special meeting in connection with the small-animal section of the work. The main subject discussed in the latter was monorchidism and cryptorchidism in dogs. In the former report it was shown that the Committee was working hard on the revision of four of its reports—those dealing with sheep, pigs, calves and parasitic diseases of cattle. Another subject of particular interest was the recommendation that a conference on nutrition be held in the autumn of 1954. It was agreed that the Animal Feeding-stuffs Trade Associa-

tion, with which the B.V.A. had a liaison committee, should be associated with this conference since they had originally suggested that some such meeting might be useful. The Council felt that the B.V.A. should sponsor such a conference.

*Editorial Committee*

Here again, of course, reference was made to the regretted death of Mr. William Brown. The Chairman reported that immediate steps had been taken to carry on the work of publishing *The Veterinary Record*; a sub-committee had been appointed consisting of Past Chairmen who, with the Association's Press Officer and editorial staff, were carrying on the day-to-day work. Further, the Council approved the suggestion that advertisements be inserted in suitable newspapers seeking as a new editor a man primarily with journalistic qualifications; the hope was expressed, however, that a veterinary surgeon who was also a journalist should be employed if at all possible.

*Harry Steele-Bodger Memorial*

The first meeting of the newly appointed committee to administer the Memorial had been held, and it was noted that the sum of £3,573 7s. 1d. had been invested in 3½ per cent. Treasury Stock. It was agreed that applications for the scholarship should be invited through *The Veterinary Record*, possibly in June, 1954, by which time it was hoped that sufficient income would have accrued.

*Congress Provisional Committee*

The Chairman reported that arrangements for the Congress in Torquay (1954) were well in hand and that the dates would be September 19th to 25th. Headquarters hotel would probably be the Palace, while meetings would be held at Torre Abbey, with the Exhibition in the Spanish Barn.

## QUESTIONS IN PARLIAMENT

### Caldra Method of Netting Rabbits

Major Anstruther-Gray (February 2nd) asked the Secretary of State for Scotland what enquiries have been made by his Department into the Caldra method of netting rabbits, and whether he will make a statement.

Mr. J. Stuart: A technical officer of the Department of Agriculture has already examined the equipment used in the Caldra method, and Sir Eric de la Rue, the originator of the technique, has been good enough to arrange a demonstration for officials to-morrow night. The Scottish Society for the Prevention of Cruelty to Animals and the Universities Federation for Animal Welfare have published a pamphlet describing the method, and my Department will draw the attention of farmers to the technique.

Major Anstruther-Gray: Will my right hon. Friend be prepared to make a statement regarding the experiment which is to take place to-morrow night?

Mr. Stuart: Weather permitting—that is to say if the experiment takes place—I will do so.

### Myxomatosis

Mr. Hurd (January 28th) asked the Minister of Agriculture to what extent myxomatosis has now spread in this country; what are the areas concerned; and when he expects to receive the recommendations of the Carrington Committee.

Sir T. Dugdale: Since the first outbreak was diagnosed at Edenbridge, Kent, on October 13th last, nine further outbreaks of myxomatosis in wild rabbits have been confirmed in Kent, East Sussex, Essex and East Suffolk. There has been no appreciable local spread of the disease from any of the centres of infection, which are mainly near the coast. I expect to receive recommendations from the Carrington Committee before the end of March.

Major Anstruther-Gray (February 4th) asked the Minister of Agriculture the present position with regard to myxomatosis in rabbits; and what progress has been made with his scientific investigations into this disease.

Sir T. Dugdale: In reply to the first part of the question, I would refer my hon. and gallant Friend to the reply I gave to my hon. Friend the Member for Newbury (Mr. Hurd) on January 28th last. Since then a further outbreak of the disease has been confirmed in Kent.

With regard to the second part, a study has been made of the scientific investigations into myxomatosis undertaken in Australia and elsewhere. Some recent investigations have been carried out on islands off the Scottish coast and others are contemplated both there and on the mainland. The main line of research will be into the ecology and distribution of mosquitoes and other rabbit-biting insects. This work cannot begin until the spring when the mosquito becomes active again.

### Importation of Landrace Pigs

Mr. Hurd (February 4th) asked the Minister of Agriculture why he has considered it necessary, if the essential disease safeguards are observed, to bar the free importation from the Continent of Landrace pigs for breeding purposes: and whether he will review this policy.

Sir T. Dugdale: Under the Diseases of Animals Act, I am empowered in general to make an order allowing importations of live animals from the Continent and elsewhere only if they are required for exceptional purposes. Whatever precautions are taken, every importation of live animals involves some risk of importing disease, and for this reason, even when the exceptional purpose has been established, imports of live animals must be restricted to what is necessary to meet essential needs. I am not, therefore, able to allow free importation, though I am prepared to review, in due course, the case for a further limited import.

## NOTES AND NEWS

### Diary of Events

Feb. 16th.—Annual General Meeting of the Eastern Counties Veterinary Society, B.V.A., at the Bell Hotel, Norwich, 10.45 a.m. Joint Meeting with the Essex Veterinary Society, B.V.A., 2.15 p.m.

Feb. 17th.—Meeting of the Royal Society of Medicine at 1, Wimpole Street, W.1, 5 p.m.

Feb. 17th.—Annual General Meeting of the Scottish Metropolitan Division, B.V.A., at the Royal (Dick) School of Veterinary Studies, 2.30 p.m.

Feb. 19th.—Annual General Meeting of the Lancashire Veterinary Association, B.V.A., at the Midland Hotel, Manchester, 2.30 p.m.

Feb. 19th.—Joint Meeting of the Hertfordshire and Bedfordshire Veterinary Society, B.V.A., and the Mid-Herts Division, B.M.A., at the Peahen Hotel, St. Albans, 8.15 p.m.

Feb. 19th.—Annual General Meeting of the Royal Counties Division, B.V.A., at the Caversham Bridge Hotel, Reading, 2.30 p.m.

Feb. 20th.—Meeting of the Biochemical Society at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1, 11 a.m.

Feb. 24th.—Annual General Meeting of the South-Eastern Division, B.V.A., at the Royal Star Hotel, Maidstone, 2.30 p.m.

Feb. 26th.—University of Liverpool Veterinary Society Annual Ball, in the Students' Union, Bedford Street, Liverpool

Feb. 26th.—Annual Ball of the Liverpool University Veterinary Society in the Union, Bedford Street, Liverpool, 8 p.m.

Mar. 18th.—Annual Dinner and Dance of the East Midlands Division, B.V.A., at the George Hotel, Nottingham, 7.15 p.m.

Mar. 25th.—V.V.B.F. Ladies' Guild: North of Scotland Division, B.V.A., Annual Dance, Aberdeen.

Mar. 26th.—Annual Dinner and Dance of the Yorkshire Division, B.V.A., Parkway Hotel, Leeds.

**Sept. 19th—25th.—72nd Annual General Meeting and Congress of the British Veterinary Association at Torquay.**

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## PERSONAL

*Birth.*—Drew-Smythe.—On January 30th, 1954, to Jean Drew-Smythe, B.Sc., M.R.C.V.S. (*née* Anstruther), wife of Captain R. Drew-Smythe, of Field Farm, Minety, Wilts, a daughter.

*Appointments in the Colonial Veterinary Service.*—Mr. P. J. Larkin, M.R.C.V.S., has been appointed as a Veterinary Officer, Kenya, and Mr. P. A. L. Wight, B.Sc., M.R.C.V.S., D.V.S.M., becomes a Veterinary Officer for Nyasaland.

*Ministry of Agriculture Veterinary Field Staff.*—Mr. J. D. Gilmore, M.R.C.V.S., and Mr. G. J. Philp, M.R.C.V.S., have now been appointed to the permanent staff as Veterinary Officers. Mr. Gilmore will be stationed at Sleaford and Mr. Philp at Newcastle upon Tyne.

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## R.C.V.S. OBITUARY

Dalling, Reginald Ramsdale, M.R.C.V.S., M.R.C.S., L.R.C.P., Major R.A.V.C. (T.A.) (retd.), of Bryn Castell, Caergwrle, North Wales. Graduated London, July 7th, 1915. Died suddenly, February 1st, 1954; aged 60 years.

Davies, William, M.R.C.V.S., Captain R.A.V.C. (retd.), of Vardre, Llandyssul, South Wales. Graduated Edinburgh, December 18th, 1909. Died January 30th, 1954.

## John L. Taylor, M.R.C.V.S.

### A Personal Tribute

With the passing of John Taylor of Coatbridge I should like to pay tribute to this well-known member of the veterinary profession in the West of Scotland.

A true son of the manse, his background was manifest in his everyday work and life; he was a good friend to the veterinary students, and many must have benefited greatly from his guidance. I, personally, will always appreciate the help and encouragement received from him.

His clients were his friends—for once one knew him it could not be otherwise. He was an admirable gentleman in every sense, and our deepest sympathy goes to Mrs. Taylor and his family in their very great loss.

D. P. R.

## Mr. William Brown, M.R.C.V.S.

The President of the Royal College of Veterinary Surgeons has forwarded the B.V.A. a note received from Professor G. Ramon, Director of the Office International des Epizooties, and an Honorary Associate of the Royal College, the contents of which we reproduce below:—

"It is with great regret that I read in *The Veterinary Record* of January 16th, 1954, of the death of Mr. William Brown, the Editor of this journal.

"On my behalf, and on that of the Office International des Epizooties, will you please convey to the British Veterinary Association my deep-felt sympathy and condolences for the loss of our distinguished colleague."

We have also received a tribute from Major C. W. Hume, Director of the Universities Federation for Animal Welfare, in which he asks:—

"Is it too late for a non-veterinarian body to add one brief tribute to those which have recently been published in the *Record*? Again and again we have been impressed by the striking courtesy and kindliness with which we were met whenever we had occasion to communicate with Mr. Brown. Even more important, from our point of view, is the fundamentally humane attitude which the *Record* has always exhibited under his guidance. One wonders how much it may not have contributed to the humane outlook which prevails generally in the profession."

## Captain W. Davies, M.R.C.V.S.

The funeral of Captain William Davies, of Vardre, Llandyssul, Cards, took place on Wednesday, February 3rd, 1954, at Pantydefaid Chapel, near Llandyssul, when a large number of friends and members of the farming community from a wide area gathered to pay their last tributes to a much-loved and greatly respected man. The veterinary profession was well represented, and amongst those who attended were the following: Messrs. A. F. Butler (representing the Ministry of Agriculture and Fisheries, Welsh Department), D. K. Bryson (representing the South Wales Division, B.V.A.), P. Dudlyke (representing Animal Health, Cardigan), D. E. Davies, E. T. Rees Evans, A. V. Griffiths, T. H. Jones, F. V. John, W. S. Mackay (representing Mr. A. G. Beynon, S.V.O., and Animal Health, Carmarthen), J. McIlwaine, A. T. Morgan, M. Wynne.

D. K. B.

Mr. J. Campbell Hill writes:—

Once more the dread spectre has passed through the South Wales Division of the B.V.A. A well-known, respected and original founder-member of the Division, in the person of Captain William Davies, of Vardre, Llandyssul, has passed away. He was an active worker in the Division and served well both as President and as Council member. Never demonstrative, but in quiet tones always correct, he aptly displayed the salient characteristics of a natural gentleman.

He was a graduate of the Royal (Dick) School of Veterinary Studies, Edinburgh, in 1910, and set up in practice in his native village amongst the people whom he loved and felt at home. Of yeoman farmer stock, he built up a large clientele and faithfully served his fellow-countrymen, who will miss him for his sound, quiet and sagacious experience. We were brought together about 1908 and have been friends ever since. To the profession his memory will remain as a pattern and an example in its serenity, kindliness and gentlemanly conduct.

To Mrs. Davies and her family we pay our respects and tender our deepest sympathy in their great trial, coming as it has after a long illness of great suffering, borne with fortitude; may it be lightened by the knowledge that he whom they loved so dearly has at last passed beyond all pain. This meed of comfort and consolation may support them in their days of sorrow.

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## RETIREMENT OF SIR REGINALD FRANKLIN

The Ministry of Agriculture and Fisheries has announced that Sir Reginald Franklin, K.B.E., C.B., the Deputy Secretary, will retire from public service at his own request as from April 30th next.

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## RETIREMENT OF PROFESSOR T. G. BROWNE

Prior to the Annual General Meeting of the Veterinary Medical Association of Ireland on Friday, January 29th, 1954, a presentation on behalf of members was made by Mr. Arthur Donnelly, outgoing President of the Association, to Professor T. G. Browne on his retirement as Principal of the Veterinary College of Ireland at Ballsbridge.

Mr. Donnelly said that Professor Browne had been with the College since 1913 and had been Principal since 1941. It was during his time as Principal that negotiations were begun with the Universities to come to some arrangement whereby students of the Veterinary College could obtain a University degree as well as a membership diploma. For his part in these negotiations Professor Browne received the honorary degree of M.V.Sc. from the National University and the degree of M.Sc. from the Dublin University. Apart from his academic qualifications, his work on spinal and local anaesthesia in cattle, horses and dogs had won him world-wide recognition.

Professor Browne was also presented with a wireless set by Professor J. A. Nicholson, the new Principal of the Veterinary College, on behalf of the staff of the College, and with a silver salver by Mr. M. Twomey, President, on behalf of the Students' Union of the College.

Professor Browne expressed his appreciation of the gifts.

Tributes to him were also paid by Professor P. E. Mullaney, Hon. Secretary of the Association (outgoing); Professor H. Lamont, Director of Veterinary Research to the Northern Ministry

of Agriculture, and Professor at Queen's University, Belfast; and Mr. A. McLean, Chief Veterinary Officer to Belfast Corporation.

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## ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

ANTHRAX:

*Essex.*—Bovinger Hall Farm, Bovinger, Nr. Ongar (Feb. 5).

*Hants.*—Wellers Place Farm, Bentworth, Alton (Feb. 2).

*Lancs.*—Cross House Farm, Goosnargh, Preston (Feb. 1); Chingle House, Goosnargh (Feb. 2); 143, Bowerham Road, Lancaster (Feb. 3).

*Sussex.*—Castle Hill Farm, Rotherfield (Feb. 4); Church House, Rotherfield (Feb. 5).

*Wilts.*—Ley Farm, Teffont, Salisbury (Feb. 2).

FOOT-AND-MOUTH DISEASE:

*Monmouth.*—The Grange, Raglan (Jan. 30).

FOWL PEST:

*Beds.*—Colesden, Bedford (Feb. 3).

*Cambs.*—Manor Farm, Walpole Highway, Wisbech (Feb. 4).

*Ches.*—70, Whitehurst Road, Heaton Mersey, Stockport (Feb. 5).

*Herts.*—Manor Farm, Barley, Royston (Feb. 2).

*Hunts.*—57, Main Street, Yaxley, and 59, Main Street, Yaxley, Peterborough (Feb. 2).

*Lancs.*—Brook Farm, 200, Heyhouses Lane, and Atkinsons Farm, St. Annes (Feb. 1); Rustic House, Catterall, Preston; Railway Allotments, Arpley, Warrington (Feb. 4); Workhouse Farm, Graston, Preston (Feb. 5); Poultry Field, Cottam Lane, Longton, Preston (Feb. 6).

*Lincs.*—Erofton Cottage, Aswarby, Sleaford (Feb. 1); 1, Cawood Lane, Gosberton, Spalding (Feb. 3); The Gables, Sutton St. James, Holbeach, Spalding (Feb. 4); 3, Cawood Lane, Gosberton, Spalding; Halfleet House, Sleaford Road, Heckington, Sleaford (Feb. 6).

*London.*—61, Pulborough Road, Wandsworth, S.W.18 (Feb. 1).

*Middx.*—Pole Hill Lodge Farm, Hillingdon, Uxbridge (Feb. 3).

*Norfolk.*—The Cottage, The Street, Caston, Attleborough (Feb. 2).

*Notts.*—Rosemary, Brake Road, Walesby, Newark (Feb. 4).

*Salop.*—Hall Farm, Westbury, Shrewsbury (Feb. 7).

*Yorks.*—Fishponds Farm, Holmefield, Halifax; Rutlings Lane, Ossett (Feb. 2).

SWINE FEVER:

*Beds.*—Chase Farm, Arlesey (Feb. 1).

*Ches.*—Whitegates Farm, Malpas (Feb. 1).

*Glouces.*—Black Hole, Berkeley Road, Berkeley (Feb. 2).

*Lancs.*—Leyfield Farm, Leyfield Road, West Derby (Feb. 1); Gregsons Bridge Farm, Burscough, Ormskirk; Turnover Hall Farm, St. Michael-on-Wye, Preston (Feb. 3); Oak Farm, Oak Lane, West Derby, Liverpool (Feb. 5).

*Lincs.*—Spring Farm, Folkingham, Sleaford (Feb. 3); Hitwells Yard, Chapel Corner, Holbeach Drove, Whaplode Drove, Spalding (Feb. 6).

*Norfolk.*—Springfield, Ling, Norwich (Feb. 4).

*Salop.*—Roman Bank, Rushbury, Church Stretton (Feb. 1).

*Staffs.*—Forton Hall Farm, Forton, Newport (Feb. 1).

*Suffolk.*—Friesland Farm, Burnt Fen, Bury St. Edmunds (Feb. 2); Wild Street, Beck Row, Mildenhall, Bury St. Edmunds (Feb. 5); Hall Farm, Oxley, Ipswich (Feb. 6).

*Surrey.*—Warlingdene, Lyne Lane, Thorpe, Egham (Feb. 6).

*Yorks.*—Midfield, Ivy House Lane, Wakefield (Feb. 2); Derwent Cottage Farm, North Driffield, Selby; Hilltop Farm, Birkwood Road, Normanton (Feb. 3); Nunnery Piggeries, Sheffield, 2; 23, Leads Road, Stoneferry, Hull (Feb. 5).

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## FOWL PEST

PROHIBITION OF MOVEMENT OF POULTRY INTO CERTAIN AREAS

The Ministry of Agriculture and Fisheries, after consultation with representatives of the poultry industry, has decided to take further measures to control the spread of fowl pest in the country.

An Order has accordingly been made under the Diseases of Animals Act, 1950, prohibiting the movement of poultry, except day-old chicks or hatching eggs, into Wales, Cheshire, Derbyshire, Shropshire, Staffordshire, Herefordshire, Warwickshire and Worcestershire from any other part of Great Britain. This area has been selected as a "clean area" because the number of outbreaks of the disease that have occurred there in the last few years have been negligible compared with the position in other parts of the country. Such outbreaks as have occurred have been associated with the movement of poultry stock from localities outside the area.

The new Order came into operation on Friday, February 5th, and the movement of poultry, day-old chicks and hatching eggs into Scotland and the Scilly Isles from any other part of Great Britain will continue to be prohibited.

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## UNIVERSITY OF GLASGOW
## DEPARTMENT OF VETERINARY PATHOLOGY

### Syllabus of Post-graduate Course in Clinical Laboratory Methods

The Course on Clinical Laboratory Methods will now be held from September 27th to October 1st, inclusive, and NOT from September 20th to 24th as previously announced. The syllabus will include:—

1. PATHOLOGY
   - (*a*) The examination of pleural and peritoneal fluids; sputum; pus; milk samples.
   - (*b*) Haematology: Collection of samples; anticoagulants; preparation of blood films; differential white cell count; total white and red cell counts; haemoglobin; the use of the haematocrit.
   - (*c*) Urine analysis: Collection of samples; physical examination; protein; blood; sugar; ketones; bile pigment; bile salts; microscopical examination; cells and casts; organisms; interpretation of findings.
   - (*d*) *Post-mortem* examination of poultry.
2. MICROBIOLOGY
   - (*a*) The diagnosis of canine leptospirosis.
   - (*b*) *Clostridium welchii* infections in sheep.
   - (*c*) *Cl. oedematiens*: Black disease; malignant oedema.
   - (*d*) Blackquarter infections: *Cl. chauvoei*; *Cl. septique*.
   - (*e*) The diagnosis of Johne's disease.
   - (*f*) Anthrax.
   - (*g*) The diagnosis of canine distemper.
   - (*h*) The diagnosis of canine contagious hepatitis (Rubarth).
   - (*i*) The diagnosis of ringworm infection in animals.
3. PARASITOLOGY
   - (*a*) The identification of the common nematodes and cestodes of domestic animals.
   - (*b*) The counting and differentiation of the eggs of worm parasites.
   - (*c*) The laboratory diagnosis of (i) parasitic bronchitis; (ii) coccidiosis; (iii) trichomoniasis.
   - (*d*) The recognition of:—
     - (i) The commoner fleas, lice and flies of veterinary importance.
     - (ii) The mange mites of domestic animals.

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## B.R.X. CLUB, BRISTOL UNIVERSITY

The annual dinner of the B.R.X. Club is to be held at the Royal Veterinary College on Saturday, April 3rd. Professor James McCunn will be the guest of honour, and the President, Professor C. W. Ottaway, will be in the chair. Members should receive their formal invitations with reply slips by the end of February. Anyone who has been missed out should write direct to A. S. King, Hon. Secretary, B.R.X. Club, Department of Veterinary Anatomy, The University, Bristol, 8.

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## ROYAL COUNTIES SHOW

Major J. G. Morrison, Conservative M.P. for Salisbury, was elected President for 1954 of the Royal Counties Agricultural Society at the annual meeting at Basingstoke. He succeeds the Duke of Gloucester. This year's Show is at Salisbury.

### HOMO SAPIENS

While talking to the agricultural students at a farm institute on "Parturition in the Bovine," the lecturer was asked to describe caesarean section. After he had done so, a student put his hand up and said, "Surely, sir, that is a job for a veterinary surgeon."

## CORRESPONDENCE

*The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement*

### THE R.A.V.C. AND MEAT INSPECTION

Sir,—The interesting article entitled "The Royal Army Veterinary Corps" which appeared in *The Veterinary Record* of January 9th, 1954, brought back many memories, more especially as regards the doings of the Corps in the Middle East and India during the second world war with some of which I was intimately concerned.

To us, as to most members of our profession, the fact that meat inspection in the Army, like that in civil life, was not the responsibility of the Veterinary Service, was a sore point. The assumption of these duties by the R.A.V.C. in Middle East Command in 1942, therefore, gave great satisfaction to the whole Corps; of much greater import, however, was the taking over of meat inspection by the Veterinary Services in India Command in 1944 because the task involved was infinitely greater, and the results were to be more lasting.

It occurred to me that it might be of interest to your readers to record the inner history of how and why this revolutionary change came about.

Shortly after assuming the appointment of Director of Veterinary Services in India in February, 1944, it became evident to me that the inspection of meat for the forces, as carried out by the Royal Indian Army Service Corps, left much to be desired. It was particularly galling to know that but for the willing help of veterinary officers throughout the country, who carried out all *ante-mortem* inspections and whose advice was invariably sought in cases of difficulty, the system could not work at all.

All veterinary officers were instructed to report any case of unsatisfactory meat inspection which came to their notice, and one day in September, 1944, an R.A.V.C. officer reported that two carcases of sheep infected with anthrax had been issued to a British infantry regiment in his station. The R.I.A.S.C. officer concerned was suspicious and retained a third carcase which he asked the veterinary officer to inspect; the latter suspected anthrax and confirmed it by microscopic examination.

The incident was reported at once to the Q.M.G. in India, who instructed me to go to Delhi for an interview. When I had made my verbal report the Q.M.G. sent for the Director of Supplies and Transport, a Major-General, and asked him in my presence how such a serious mistake came about. The General admitted that he was very short of officers experienced in meat inspection duties, but said that he had asked for 60 sanitary inspectors from England. With the Q.M.G.'s permission I asked him if any of his officers were capable of diagnosing anthrax microscopically and he had to admit that they were not. The Director of Supplies and Transport was then ordered to report to the Q.M.G. within one month the position as regards the arrival of the sanitary inspectors.

The upshot of all this was that the sanitary inspectors could not be provided, and on December 5th, 1944, the duties of meat inspection throughout India Command were taken over by the Indian Army Veterinary Service.

As can be deduced from details given later in this letter the task which confronted the A.V.S. was no light one and was exacerbated by the rapidity with which the transfer of responsibility came about, the fact that it occurred when the A.V.S. was fully employed in the midst of a great war and, lastly, because no previous records of the condemnation of meat in India were available.

Recruitment of graduates of Indian veterinary colleges for these new duties was started at once and courses in meat inspection were arranged at the Officers' Training School at Ambala under the direction of an experienced R.A.V.C. officer who had carried out these duties in Northern Ireland. Later, refresher courses were inaugurated and included the inspection of frozen meat and fish.

A survey of all butcheries and slaughterhouses in India within the jurisdiction of the Armed Forces was carried out, and recommendations were made for their improvement. Gradually the new arrangements began to function satisfactorily, and by December, 1945, meat inspection was in progress at 128 butcheries throughout India. At the larger centres, whole-time inspectors were employed, and at the smaller butcheries veterinary officers inspected meat in addition to their other duties. The large number of carcases inspected can be judged from the following summary of inspection work carried out in the one month of December, 1945.

| | *Cattle* | *Sheep & Goats* | *Pigs* |
|---|---|---|---|
| Animals slaughtered ... | 5,074 | 127,700 | 5,137 |
| Carcases inspected ... | 4,969 | 121,619 | 5,137 |
| Percentage inspected ... | 97 | 95·24 | 100 |

The small percentage of carcases not inspected occurred in outlying units where the animals were slaughtered in unit lines; later, such issues were reduced to the minimum. In addition, the inspection of fresh fish, poultry and frozen meat was also being carried out.

The principal conditions encountered necessitating condemnation of carcases were:—

Cysticercosis, particularly in pigs.

Emaciation and dropsy in sheep and goats.

Caseous lymphadenitis.

Pneumonic lesions in sheep, goats and pigs.

Contamination of carcases by ruminal and intestinal contents was a problem until the butchers employed had been instructed in proper methods of the clean dressing of carcases.

Cirrhosis was very common in all food animals in India and was the cause of a high percentage of rejection of livers.

Tuberculosis was a very rare occurrence.

It is gratifying to record that meat inspection is now the firmiy established responsibility of the Veterinary Services in the armies of both India and Pakistan, and that a lead has been given to the public health authorities in these countries where some of the Provincial Governments have availed themselves of the information now available at the headquarters of their respective Army Veterinary Services.—Yours faithfully, E. S. W. Peatt, The Lilacs, Summer Hill, Ashford, Kent, *January 28th*, 1954.

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### ACID-FAST BACILLI

Sir,—In your correspondence columns of August 15th last, Mr. J. Deans Rankin invited me to indicate how non-tuberculous acid-fast organisms might be distinguished from tubercle bacilli in milk.

This has assumed increased importance as several authors, *e.g.*, Stuart, P., & Harvey, P. (*Vet. Rec.* 1951. 881), and Tucker, E. W. (*Cornell Vet.* 1953. 576), have shown that the injections for the treatment of mastitis, together with certain otherwise non-pathogenic acid-fast organisms, *e.g.*, *Mycobacterium lacticola*, may set up an induration of the udder associated with the excretion of the acid-fast organisms in milk.

Apart from cultivation of either organism or the demonstration of tubercle bacilli by biological test, one may have to depend on microscopy for the differentiation of the two types of organism, and in this the morphology of the organisms and the cytology of the milk are of the utmost importance.

The cytology of tuberculous milk has been described by Torrance, H. L. (*Vet. Rec.* 1922. 289, and *Vet. Rec.* 1927. 874), and Matthews, H. T. (*Vet. Rec.* 1931. 403), who were both field workers, but the subject does not appear to have been much studied by research workers in diseases or infections other than tuberculosis. I have indicated some points in the differential diagnosis of tuberculosis of the udder in *The Veterinary Record* of November 4th, 1944.

I have found non-tuberculous acid-fast bacilli in milk on numerous occasions, and the accuracy of that diagnosis has in all cases been tested and confirmed by subsequent biological examination of the milk. In some instances they were present with, and in some fields related to, what might be described by some workers as "endothelioid cells, occasionally in groups" as mentioned by Stuart & Harvey. Such "cell groups" as I have seen in association with non-tuberculous acid-fast bacilli have been of the type generally referred to by public health veterinarians as "non-typical cell groups."

I myself have never seen a typical cytological appearance of tuberculous milk deposit associated with acid-fast bacilli other than tubercle bacilli, so long as the organisms were typical in their morphology of tubercle bacilli.

To describe the "non-typical cell group" so that others may recognise it is difficult, but in many cases the constituent endothelioid type of cell often has a well-defined and definite wall, and the grouping of the cells is very tight and compact. The group itself may be contained in an envelope and they usually occur in spaces or blanks in the smear. In many cases the group may have a pale staining but a definite non-cellular background.

With regard to the acid-fast bacilli themselves, they are frequently short and slightly ovoid in shape and aggregated in groups in which some of the bacilli are fully acid-fast and some partly acid-fast, while some may take the blue counter stain. Their arrangement is not like the almost diagnostic "Chinese character" which is often seen with tubercle bacilli. These non-tuberculous acid-fast bacilli are often found superimposed on or in pale staining ghost-like "cells," some of which stain pink and some blue.

And now to summarise. In any smear in which either a number of the acid-fast bacilli are unlike the tubercle bacilli, or some are only partly acid-fast, or the cytology is not typical of a tuberculous milk deposit—as I have attempted to describe—then I would assume the organisms to be non-tuberculous. This accords with my own experience which has been checked invariably by the biological test. I know of no indications in the literature contrary to such an assessment.

It is to be hoped that more work will be done by laboratory workers on the cytology of milk to define, name, and possibly to determine the origin of the different cells found in tuberculous and other diseased milk samples.—Yours faithfully, J. S. Steward, 45, St. James' Street, Nottingham. *February 4th*, 1954.

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## AMPUTATION THROUGH THE SHOULDER IN THE DOG

Sir,—I feel that the abstract appearing under the above heading, together with its extraordinary editorial footnote, in *The Veterinary Record* (No. 5. **66.** p. 81), calls for some comment.

Firstly, the editorial footnote. Certainly euthanasia in animals, or perhaps more correctly the destruction of animal life by man, is very easy—but are five years of arduous study necessary to qualify one to do that? Surely it is the duty of a responsible veterinary surgeon to preserve life where possible and the criterion for operation should be the answer to the question "is this animal going to lead a happy life?" not "is this animal going to look a little odd?"

Anyone who has performed this operation and has subsequently watched the patient behaving perfectly cheerfully, and has shared the satisfaction of the owner who, more than anyone else, is in a position to assess the happiness of his pet, can be in no doubt as to the propriety and moral justification of this operation. These remarks apply equally in the case of amputation of the hind limb.

Now concerning the technique of the operation. I am in complete agreement with Mr. Hofmeyer that high amputation is the method of choice, it is cosmetically much better than low amputation.

It is my practice to saw through the humerus in its middle third instead of disarticulating the joint. I believe that in this method shock is less and by preserving the contour of the shoulder joint the cosmetic result is improved. Provided blood vessels are recognised, isolated and ligated, haemorrhage does not occur. The operation can be completed in about three-quarters of an hour and the animal returns home the following day. This technique applies equally to the cat, which adapts itself even more rapidly than the dog.—Yours faithfully, N. R. Turnbull, 65, Worting Road, Basingstoke. *February 1st*, 1954.

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## "CUTTING" IN HORSES

Sir,—Mr. Hancock's article about Moorcroft's observations in 1800 takes us back a century before the publication of a book by a Canadian farrier, who worked in America, and evolved a system of shoeing to correct lamenesses of many sorts, as well as cutting and over-reaching, based on the mechanics of the movements of the horse's legs.

Apparently he had read most of the works of the well-known English veterinarians of the nineteenth century, and he dismisses many of their theories, somewhat contemptuously, in favour of his own system which, it must be admitted, he had *practised* for 45 years in his own business.

I can find no reference to Moorcroft in his book, so I imagine that he came to the same conclusion about cutting quite independently. He also explains what has puzzled Mr. Hancock, *viz.*, how cutting can be cured both by thickening the outer or inner quarter of the shoe, in different horses, according to the conformation of the pastern.

I have practised his remedies for over 20 years now, and found them very satisfactory. Cutting and over-reaching, as well as other irregularities of gait and lameness, in many cases will respond almost instantly to shoeing correctly according to his methods.

Those interested should consult the book "The Foot of the Horse" by David Roberge, copyright 1894, published in 1919 by the American Veterinary Publishing Co., Chicago. The literary style is not of a high order—the author states that he had to learn the language in order to write the book and he admits his lack of skill—but the diagrams are clear and illustrate his points well.—Yours faithfully, G. S. Muir, 15, Temple Road, Stowmarket, Suffolk. *February 6th*, 1954.

## DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

**Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases**

| Period | Anthrax | Foot-and-mouth | Fowl Pest | Sheep Scab | Swine Fever |
|---|---|---|---|---|---|
| 16th to 31st December, 1953 ... | 20 | 1 | 52 | — | 60 |
| Corresponding period in—1952 ... ... | 78 | — | 95 | — | 63 |
| 1951 ... ... | 20 | 18 | 28 | 5 | 41 |
| 1950 ... ... | 13 | — | 39 | — | 54 |
| 1st January to 31st December, 1953 | 609 | 40 | 978 | — | 2,713 |
| Corresponding period in—1952 ... ... | 1,215 | 495 | 498 | 1 | 891 |
| 1951 ... ... | 407 | 116 | 844 | 16 | 1,343 |
| 1950 ... ... | 344 | 20 | 172 | 26 | 430 |

### Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, i.e., herds officially certified as free from Tuberculosis as at December 31st, 1953, was as follows:

| England | Wales | Scotland | Total (Great Britain) |
|---|---|---|---|
| 54,332 | 29,158 | 28,385 | 111,875 |

Advertiser's Announcement

*Introduction of Veterinary Cytamen '250'*

Glaxo Laboratories, Ltd., announce the introduction from February 8th of a new strength Veterinary Cytamen (crystalline vitamin $B_{12}$) containing 250 micrograms vitamin $B_{12}$ per c.c. Veterinary Cytamen '250' will be available in 10 c.c. rubber-capped bottles.